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TAXONOMIC REVISION OF *DRESSLERIA* (*ORCHIDACEAE*, *CATASETINAE*)

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ABSTRACT

A taxonomic revision of the neotropical orchid genus *Dressleria* Dodson is presented. A total of 12 species are included, a key to identification is given, and all species are illustrated with photographs or line drawings. **Dressleria williamsiana** H.G. Hills, sp. nov., is described.

KEY WORDS: *Dressleria allenii, Dressleria aurorae, Dressleria bennettii, Dressleria dilecta, Dressleria dodsoniana, Dressleria eburnea, Dressleria fragrans, Dressleria helleri, Dressleria kalbryeri, Dressleria kerryae. Dressleria severiniana, Dressleria williamsiana,* Orchidaceae, Catasetinae

The genus *Dressleria* was established by Dodson (1975) for a group of species previously included in a broadly defined *Catasetum* L.C. Rich. *Dressleria* is distinguished from *Catasetum* by having consistently bisexual flowers, persistent leaves, and large inflorescence bracts (Fig. 1). *Dressleria* differs from a second segregate from *Catasetum* with bisexual flowers, *Clowesia* Lindl. by having the lip adnate to the column, fleshy flowers, and pollinia under pressure but lacking a trigger. *Dressleria* plants are characteristically pale green and bear white to greenish or yellowish flowers noted for their strong fragrances. Unlike *Catasetum* and *Clowesia*, pollinia of *Dressleria* become attached to the underside of the pollinator rather than onto the back of the pollinator.

Subtribe *Catasetinae* Schlechter comprises five genera: *Catasetum, Clowesia, Cycnoches, Dressleria,* and *Mormodes*. Phylogenetic analysis by Pridgeon and Chase (1998) demonstrated that all five genera of Catasetinae are monophyletic and fall into two clades. In one clade *Clowesia* is sister to *Catasetum*. In the second clade *Cycnoches* is sister to *Mormodes* and *Dressleria* sister to them both. These results as well as those from chloroplast DNA studies by Chase and Hills (1992) suggest that bisexuality with protandry has arisen twice in the evolution of the subtribe. This was first proposed by Chase and Pippen (1990) in a study of seed coat morphology.

Several problems are apparent in previous studies of *Dressleria*. First, as is true of many other groups of fleshy flowered orchids, it is helpful to work from fresh or liquid preserved material. Second, there are few preserved specimens. This is probably partially due to the difficulty of maintaining plants in greenhouse culture where they are often treated as being like the ecologically very different catasetums. The flowers last only 5-7 days; therefore field collections of pressed flowers are rare. Finally many of the published illustrations do not show the size and shape of the opening to the sac of the lip that is one of the more diagnostic characters in separating species. Some published illustrations have been made from previously dried and inadequately hydrated flowers and lack critical details.

When studying the fragrances of *Dressleria* flowers (Hills unpublished), some undescribed entities were noted. When Dodson (1975) proposed *Dressleria*, he suggested that the plants from western Ecuador might well be a distinct but similar species to what he then referred to as *D. eburnea* from eastern Ecuador. Examination of the type specimens of *Catasetum eburneum*, *C. suave*, *Dressleria helleri*, and drawings and photographs of the type of *Catasetum dilectum* has led to the

reduction of *D. suave* as a valid species to a synonym of *D. eburnea* and publication of nine additional species (Hills 1993, 2000, 2005; Bennett & Christenson 1995; Dodson 1998).

Dressleria species are most easily identified from flowers that have been allowed to mature before being photographed, drawn or preserved because the position of sepals and petals is useful in distinguishing species. The final position of the segments is not fixed until 2-3 days after the flowers open, at which time floral fragrance is evident. Fragrance too is a useful character but unfortunately it is available only on fresh flowers. It is essential to view the opening to the saccate portion of the lip to distinguish species.

Much of the material cited here has been prepared from cultivation. In some instances multiple specimens have been prepared from the same cultivated plant. When known, the source of living material is listed first, followed by a listing of all specimens that have been made from that living clone. These are indicated as "ex hort." and include living collection accession number, date, and the name and number of the person who prepared the specimen. Accession numbers for living material are assigned by the following institutions: CA, K, MO, SEL (MSBG), and UF.

DRESSLERIA Dodson, Selbyana 1: 131. 1975. **TYPE**: *Catasetum dilectum* Rchb. f. = *Dressleria dilecta* (Rchb. f.) Dodson.

Plants epiphytic with basal vermiform roots. **Pseudobulbs** fusiform-cylindrical, approximate, fleshy, fibrous, concealed by persistent leaf bases with new growth arising near base of pseudobulb. **Leaves** oblong-lanceolate, apically acute, membranaceous, persistent, alternate, distichous; leaf-blade prominently veined abaxially. **Inflorescences** basal, suberect, subcapitate or few-flowered racemes, with prominent, inflated bracts (Fig. 1). **Flowers** nonresupinate, white, greenish white, or pale yellow, fleshy, strongly fragrant when fresh. **Sepals and petals** subsimilar, linear-lanceolate to elliptic, often reflexed and recurved or spreading. **Lip** unlobed, saccate, basally adnate to column, often with a callus ridge surrounding the opening. **Column** short, stout, fleshy. **Pollinia** 2, borne on a common stipe with a viscidium. **Capsule** elliptic.

Figure 1. *Dressleria* plant showing large bracts on the developing inflorescence, a distinguishing characteristic for the genus.

Key to the species of *Dressleria*

1. Lip adnate to column more than half its height.

2. Inflorescence loosely flowered raceme.

3. Opening of sac nearly square-shaped, 4.5 mm high, 4.5 mm wide; central-western Panama ..... **Dressleria severiniana**
3. Opening of sac rectangular, 2-3.5 mm high, 1.5-2 mm wide at base of column; eastern Panama and northwestern Colombia ..... **Dressleria kerryae**

2. Inflorescence subcapitate.

4. Opening of sac heart-shaped, wider (4.5 mm) distally away from column; Costa Rica and Nicaragua ..... **Dressleria helleri**
4. Opening of sac more or less rectangular, wider (6.5 mm) proximally near column; Costa Rica ..... **Dressleria dilecta**

1. Lip adnate to column less than half its height.

5. Petals strongly reflexed, appressed to ovary; callus prominent distally of "M-shaped" opening of sac; Costa Rica and Nicaragua. ..... **Dressleria eburnea**
5. Petals not reflexed, or if reflexed then not tightly appressed to ovary; Panama, Columbia, Ecuador, Venezuela, or Peru.

6. Lip less than 1.5 cm long.

7. Sepals 5.5 mm wide, narrower than petals; northeastern Columbia and Andean Venezuela ..... **Dressleria kalbreyeri**
7. Sepals 9 mm wide, nearly as wide as petals; Panama or Peru.

8. Lateral sepals reflexed nearly to ovary; lip rounded apically with a well-defined callus surrounding a cordate opening of sac; Panama ..... **Dressleria allenii**
8. Lateral sepals spreading; lip acute apically without a callus surrounding a throat like rectangular opening of sac; Peru. ..... **Dressleria aurorae**

6. Lip more than 1.5 cm long.

9. Lip with prominent callus;

10. Callus triangular, prominent partially obscuring the opening of sac; south eastern Peru. ..... **Dressleria bennettii**
10. Callus tongue-like, extending from the tooth in opening of sac to tip of lip; northwestern Ecuador and southwestern Colombia. ..... **Dressleria williamsiana**

9. Lip callus not prominent;

11. Opening of sac rectangular; western Ecuador .....**Dressleria fragrans**
11. Opening of sac "X-shaped"; Amazonian Ecuador and Peru ..... **Dressleria dodsoniana**

1. DRESSLERIA ALLENII H.G. Hills, Lindleyana 15: 171. 2000. **TYPE**: **PANAMA**. without locality, 1976, N.H. Williams, ex hort MSBG 1976-5619, 18 Sep 1978, *J.D. Ackerman 1336* (holotype: SEL). Figs. 2 & 3.

Pseudobulbs fusiform, to 10 cm tall, 2–3 cm wide. **Leaves** to 35 cm long, to 5 cm wide. **Inflorescence** basal, loosely flowered raceme to 25 cm. **Pedicels** to 3 cm long, **Flowers** white, nonresupinate, saccate. **Sepals** 17–18 mm long, 8–9 mm wide, reflexed along the ovary. **Petals** 14–15 mm long, 11–12 mm wide, spreading. **Lip** nearly round, apex not beaked, 16–17 mm long, 13–14 mm wide. Opening to the sac cordate 5.0–6.5 mm wide x 4.0–4.5 mm high, callus thin not prominent. **Column** 6–7 mm long, 6–7 mm wide at base. **Fruit** not seen.

Figure 2. *Dressleria allenii* H.G. Hills. Photo of clonotype MSBG 1976-5619 by Mark W. Chase. The plant is still growing at MSBG.

Dressleria allenii is similar to *D. eburnea*. Allen (1949) correctly noted that the flowers agreed in nearly every detail with the description of *Catasetum eburneum* except that the flowers were smaller. Figure 3 drawn to scale, shows the difference in size between the two species. A good field character is that the sepals and petals of *D. eburnea* reflex fully along the ovary while only the sepals of *D. allenii* reflex while the petals are in the same plane as the lip.

Distribution: Panama.

Additional specimens examined. **PANAMA**: Prov. Cocle, Cerro Campana, *P.H. Allen 4559* (AMES spirit #P2722, photo SEL); All of the following specimens are collected from the same cultivated plant as the holotype. Panama without locality, 1976, N.H. Williams, ex hort. MSBG 1976-5619, *without collector s.n.* (SEL); Aug 1985, *E.A. Christenson s.n.* (SEL); 13 Aug 1987, *H.G.*

Hills 87183 (AMES spirit); 15 Aug 1989, *H.G. Hills 89031* (SEL spirit); 30 Aug 1990, *H.G. Hills 90024* (NCU, K spirit); 14 Sep 91, *H.G. Hills 91023* (NCU, AMES spirit); 30 Jul 1991, *S.W. Ingram 1082* (SEL, NCU, AMES spirit); 19 Aug 1994, *W.M. Whitten 94068* (FLAS).

Etymology: Named in honor of the late Paul Hamilton Allen (1911-1963), coauthor of the Orchidaceae for the Flora of Panama, who had a long-time interest in the Catasetinae.

Fragrance: Methyl benzoate, methyl salicylate and eugenol .

Illustration: Allen (1949) as *Catasetum eburneum*. The Allen illustration was apparently done on an immature flower and does not show the reflexed sepals.

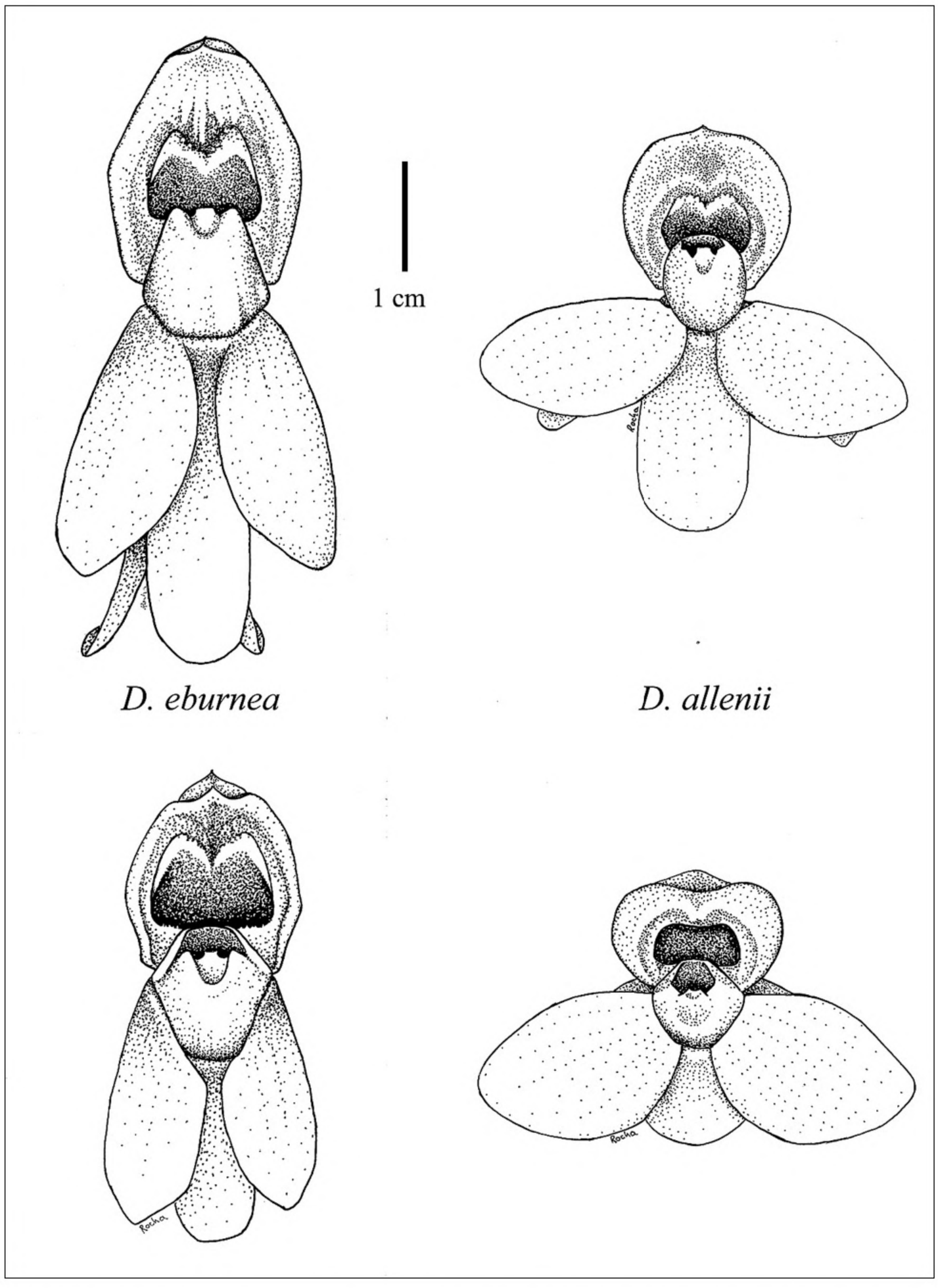

Figure 3. Size comparison of *Dressleria eburnea* (Rolfe) Dodson (*M.W. Whitten 1022*) with *D. allenii* H.G. Hills (*H.G. Hills 89031*). Each species produces a unique fragrance. Drawing by Omar E. Rocha G.

2. DRESSLERIA AURORAE H.G. Hills & D.E. Benn., Brittonia 47: 184. 1995. **TYPE**: **PERU**. Depto. de Huanuco, Tinga Maria, without exact locality, E. Jara, ex hort, 15 Jul 1989, *H.G. Hills 89030* (holotype: AMES [not yet sent]; isotype: SEL spirit). Figs. 4 & 5.

Pseudobulbs fusiform, to 10 cm tall, 2–3 cm wide. **Leaves** to 35 cm x 6 cm wide. **Inflorescence** basal**,** arching, loosely flowered raceme, to 35 cm long. **Pedicels** to 3.0 cm long. **Flowers** pale white tinted with green, nonresupinate, saccate. **Sepals**: dorsal sepal linear, acute apically, 16–18 mm long, 6.5–7 mm wide, reflexed along the ovary; lateral sepals linear acute apically, strongly divergent, 16–18 mm long, 6.5–7 mm wide. **Petals** ovate, acute apically, 15–16 mm long, 8–10 mm wide. **Lip** elliptic-ovate, acute apically, adnate to basal third of column, 14–15 mm long, 12–14 mm wide; sac transverse, obscurely 2-lobed with a throat like entrance to the rectangular opening. **Column** 5.5–6 mm long, 5.5–6 mm wide at base. **Fruit** not seen.

Dressleria aurorae with very small flowers is similar to *D.* dodsoniana but has been confused with *D. eburnea*. *Dressleria aurorae* differs from *D. eburnea* by lacking reflexed sepals and petals, lacking a callus around the opening to the sac, and by possessing a different array of floral fragrances. *Dressleria aurorae* differs from *D. bennettii* because of its smaller flowers with relatively wider sepals and lack of prominent callus. The opening to the sac is at the base of the throat-like lip lacking prominent lateral projections found in *D. dodsoniana*.

The description and illustration given in the original description (Christenson and Bennett 1995) refers to a specimen of *Dressleria dodsoniana* and not to *D. aurorae*.

Figure 4. *Dressleria aurorae* H.G. Hills & D.E. Benn. Photo of holotype *H.G. Hills 89030* by Bart Schutzman.

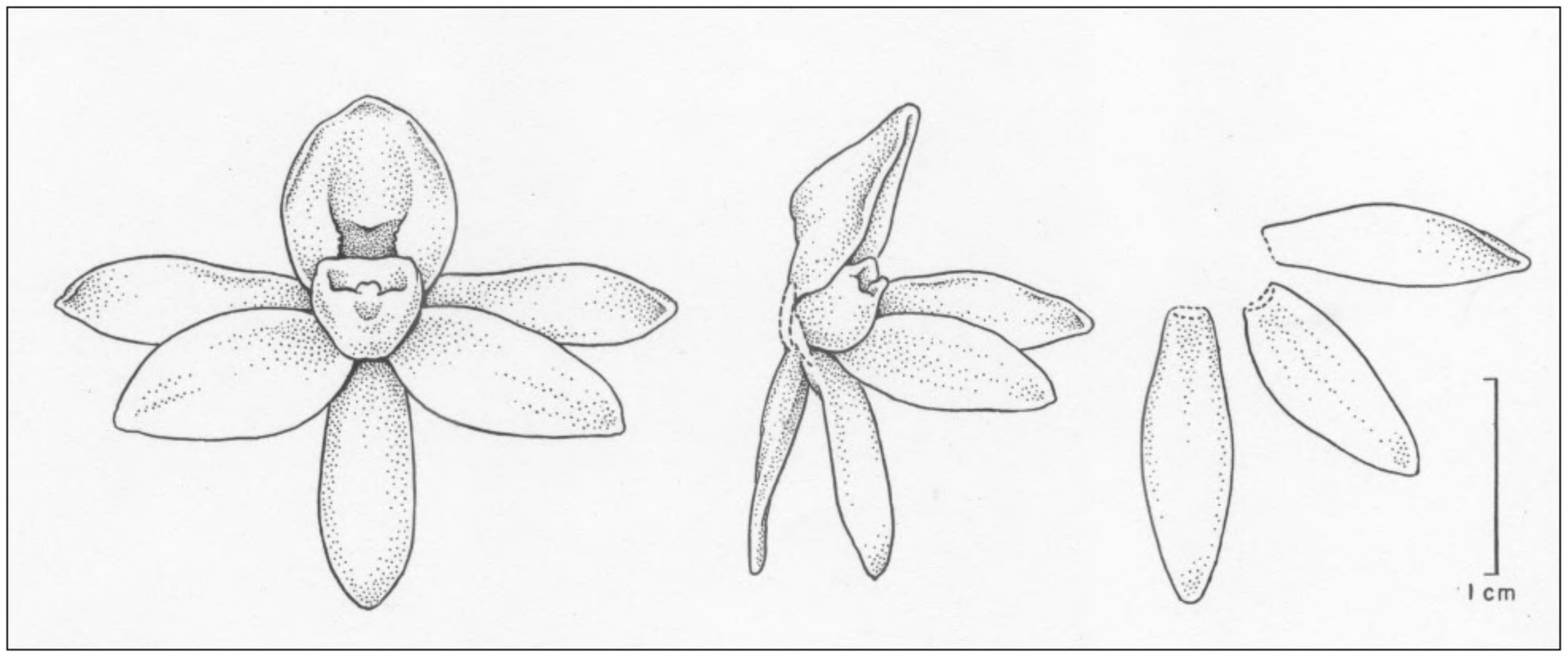

Figure 5. *Dressleria aurorae* H. G Hills & D.E. Benn. Drawing of holotype *H.G Hills 89030* by Bobbi Angell.

Distribution: Peru.

Additional specimens examined. **PERU**: Depto. de Huanuco, Leonio Prado, Caserio Clorinda Matos, 780 m 15 Dec 1995, *E. Jara P. ex Bennett 7424* (MOL).

Etymology: Named in honor of Aurora Pastorelli de Bennett (1925-), wife of David E. Bennett, Jr.

Fragrance: methyl salicylate with trace of methyl benzoate.

Illustrations: The illustration of Bennett and Christenson (1995) and used again in (1998) is not drawn from the holotype and is in fact an illustration of *Dressleria dodsoniana.* The leaf with a midvein is in error and does not represent *Dressleria* leaves.

3. DRESSLERIA BENNETTII H.G. Hills & Christenson, Brittonia 47: 186. 1995. **TYPE**: **PERU**. Depto. De Junin, Chanchamayo, Ubiriki Valley, north side of Rio Perene, Oliveras, 6 June 1991, ex hort 23 June 1991, *D.E. Bennett Jr. 5064-2*. (holotype: NCU; isotypes: NY, K spirit). Fig. 6.

Pseudobulbs fusiform to 12 cm tall, 2–4 cm wide. **Leaves** to 40 cm long, 6 cm wide. **Inflorescence** basal, arching, loosely flowered raceme, to 30 cm. **Pedicels** to 3 cm long. **Flowers** yellow to orange, nonresupinate, saccate. **Sepals:** dorsal sepal linear reflexed along the ovary 25–30 mm long, 7–8 mm wide; lateral sepals spreading, 23–25 long, 7–8 mm wide. **Petals** ovate 20–23 mm long, 11–14 mm wide. **Lip** ovate 22–23 mm long 17 mm wide with pronounced triangular callus to each side of the opening. Opening of the sac 4–5 mm wide at base of column, 4 mm high with a prominent tooth. **Column** 7–8 mm long, 10–11 mm wide at base. **Fruit** not seen.

Distribution: Peru

Additional specimens examined. **PERU**: Depto. De Junin, Chanchamayo. Ubiriki Valley, north side of Rio Perene, Oliveras 06 June 1991, D,E. Bennett 5064-2. ex hort. same plant as the holotype, 09 Jul 1992, *H.G Hills 92009* (AMES, SEL); Chanchamayo, Ubiriki Valley, north side of Rio Perene, Oliveras 06 June 1991, D.E. Bennett 5064-1. ex hort. same field collection as the holotype, 03 Jul 1992, *H.G Hills 92008* (NCU, SEL spirit).

Etymology: Named in honor of David E. Bennett, Jr (1923-2009), major contributor to our knowledge of Peruvian orchids.

Fragrance: methyl salicylate with trace of methyl benzoate.

Illustrations: A color photograph of the type plant of *Dressleria bennettii* was published by Christenson (1994). Bennett and Christenson (1995 & 1998) used the same illustration drawn from the holotype plant.

Figure 6. *Dressleria bennettii* H.G. Hills & Christenson. Holotype (*D.E.Bennett Jr. 5064-2*). Photo by Benjamin Collantes.

4. DRESSLERIA DILECTA (Rchb. f.) Dodson, Selbyana 1: 132. 1975. *Catasetum dilectum* Rchb. f., Beitr. Orchid.-K. C. Amer.: 73. 1866. **TYPE**: **COSTA RICA**. Prov. Heredia, Cariblanco, 10 May 1857, *Wendland 833*. (holotype: W; photos of holotype: AMES, SEL). Figs. 7 & 11.

Pseudobulbs fusiform to 10 cm tall, 2–3 cm wide. **Leaves** to 45 cm, to 6 cm wide. **Inflorescence** basal, erect, densely flowered, subcapitate to 20 cm. **Pedicels** to 3 cm long. **Flowers** white, nonresupinate appearing nearly round. **Sepals** 17–19 mm long, 6.5–7 mm wide strongly reflexed against the ovary. **Petals** 14–15 mm long, 10–11 mm wide strongly reflexed to the ovary. **Lip** 15–16 mm long, 12–13 mm wide. Apical half of the lip flat or slightly reflexed. Callus of the lip elevated 2–3 mm to make the lip entirely adnate to the column. Margin of opening erose distally; opening rhombic, 5.5–6 mm at the widest point, 2.5–3 mm high. **Column** 7–8 mm long, 8–9 mm wide at the base. **Fruit** not seen.

Figure 7. *Dressleria dilecta* (Rchb. f.) Dodson. Photo by Calaway H. Dodson.

Dressleria dilecta is similar to and has been confused with the sometimes sympatric *D. helleri* with which it shares a subcapitate inflorescence. The inflorescences of *D. dilecta* are usually more densely flowered than those of *D. helleri*. The opening to the sac of *D. dilecta* is rhombic whereas that of *D. helleri* is cordate. The two species differ by their floral fragrances. There is gradation in floral form between *D. dilecta* and *D. helleri* and it is conceivable that the species hybridize in nature despite the fragrance differences. In addition, the flowers of both *D. dilecta* and *D. helleri* in the Cariblanco area of Costa Rica show some variation where the two species are sympatric with *D. eburnea*.

The *Lankester 1181* specimen of *Dressleria dilecta* is enclosed in the folder with the isotype specimen of *D. suave* and has probably added to the confusion when samples were sent to AMES for identification. There is also a spirit specimen of *Lankester 1181* at AMES.

Distribution: Costa Rica

Additional specimens. **COSTA RICA**: Prov. of Alejuela, Virgen, 1984, *M.W. Chase 84205A* (K). Many plants were collected in Prov. of Heredia, Rt 9 at km 47, Sarapiqui River Valley, Mar 1986, Hills, Whitten & Ballestara ex hort. F1085, *11 Jun 1986, H.G. Hills 1019* (FLAS, SEL spirit); 26 Jun 1989, *W.M. Whitten 1021* (FLAS); 24 Jun 1991, *S.W. Ingram 971* (SEL); ex hort. F1048, 21 May 1987, *H.G. Hills 87179* (SEL spirit); ex hort. F1050, 11 Nov 1987, *H.G. Hills 87144* (FLAS, SEL spirit); 03 Jun 1991, *S.W. Ingram & Uguccioni s.n.* (SEL); ex hort. F1086, 22 May 1987, *H.G. Hills 87182* (SEL spirit); [unstated University of Florida accession], 21 Jun 1989, *W.M. Whitten 1019* (FLAS); ex hort. F1084, 29 Jun 1989, *W.M. Whitten 1020* (FLAS); near San Carlos, Laguna de Maria Alguilar, 800 m, March 1986, C. Horich, ex hort. 1987, *R. Jenny s.n.* (AMES spirit); Cariblanco, A. Delgado, ex hort 7 Jun 1957, *C. Lankester 1695* (SEL); Prov. of Limon, lower Rio Reventazón near Pascuas, 350 m, C. Horich, ex hort MO 60-7-53, *without collector* (MO, SEL spirit #4182); without location, ex hort., Apr 1955, *C. Lankester s.n.* (SEL); without location, ex hort. *H. Teuscher s.n.* (SEL spirit #4186); without location, Carrillo, ex hort. May 1928, *C. Lankester 1181* (AMES).

Etymology: From Latin *dilectus*, beloved.

Fragrance: alpha pinene, beta ocimene.1,8 cineole and p-dimethoxybenzene. The 1,8-cineole should be easily detected early morning.

Illustrations: Teuscher (1972) as *Catasetum dilectum*; Bechtel and Cribb (1980) as *Dressleroa dilecta*; Jenny (1981) as *Dressleria dilecta*; Batchelor (1983) as *Catasetum eburneum*; Rodrigues C. et al. (1986) as *Dressleria dilecta*; Dressler (1993) as *D. dilecta*.

Pollination: Lankester (1960) observed pollination by *Euglossa species*. Dodson (1975) reported pollination by *Euglossa hansoni* at San Vito de Java, Costa Rica.

5. DRESSLERIA DODSONIANA H.G. Hills, Orquideología 24: 133. 2005 (published 2006). **TYPE**: **ECUADOR**. Amazonia without location, *D. Delasandro.* ex hort. 23 Sep 2003, *H.G. Hills 20030919* (holotype: FLAS; isotypes: AMES spirit, SEL spirit). Fig. 8.

Pseudobulbs fusiform to 12 cm tall, 2–4 cm wide. **Leaves** to 35 cm long, to 6 cm wide. **Inflorescence** basal, arching, loosely flowered raceme, to 35 cm. **Pedicels** to 4 cm long. **Flowers** whitish green, nonresupinate, saccate. **Sepal**: dorsal sepal linear, 24–26 mm long, 6–6.5 mm wide, reflexed along the ovary; lateral sepals linear-oblong, obtuse apically, strongly divergent, 23–25 mm long, 6–6.5 mm wide. **Petals** obliquely ovate, obtuse apically, 21–23 mm long, 10–12 mm wide. **Lip** elliptic-ovate, acute apically, adnate to basal third of column, 20–22 mm long, 12–14 mm wide; sac

transverse, obscurely 2-lobed with an "X-shaped" opening wider distally than at base of column. **Column** 5.5–6 mm long, 7.5–8 mm wide at base. **Fruit** not seen.

Figure 8. *Dressleria dodsoniana* H.G. Hills. Holotype (*H.G Hills 20030919*).

Dressleria dodsoniana is allied to *D. fragrans* but differs by having a narrower opening to the sac with prominent lateral projections creating an X-like opening unlike the rectangular opening of *D. fragrans*. The floral fragrance of *D. dodsoniana* is primarily methyl salicylate with a minor component of methyl benzoate while the floral fragrance of *D. fragrans* is wholly eugenol.

Dodson once considered everything in South America to be *Dressleria eburnea* even though he himself mentioned that the material from eastern Ecuador was probably a different species from the western Ecuador material.

Distribution: Amazonian Ecuador, and northern Peru.

Additional specimens examined. **ECUADOR**: Prov. Napo-Pastaza, Mera, 16 Feb 1956, *Asplund 19404* (AMES, K, NY); without location, 8 Mar 1940, *Lugo 34* (Herb. Garay); Hacienda San Antonio Baron von Humboldt, 2.5 km north of Mera on road from Baños to Puyo, 14 Mar 1985, *C.H. Dodson & L.M. Bermeo 15679* (MO); Motolo, 11 Mar 1969, *Lugo 694* (GB); without location, 20 Jul 1972, *Lugo 1933* (GB); Lumbaqui, road from Baeza to Lago Agrio 9 Feb 1986, *A Hirtz et al. 2713* (MO); Prov. of Tunguragua, San Francisco on road from Baños to Puyo, 12 Mar 1963, *C.H. Dodson & L. Thien 2366* (SEL); Prov. of Morona-Santiago, Rio Upano near Macas, 29 Aug 1987, de K. G. Lacerda et al. ex hort. F87031, 27 Dec 1987, *H.G Hills 87143* (FLAS); *W.M. Whitten s.n.* (FLAS). Amazonian Ecuador without exact location, ex hort. 13 Dec 2002, *H.G Hills 20021201* (SEL spirit). **PERU**: Depto. San Martin, Tarapoto, at km 30 on road from Tarapoto to Yurimaguas, 650 m, 10 April 1965, *D.E. Bennett & A. Bennett 1699* (MOL, illustration only).

Etymology: The species name honors Calaway H. Dodson (1928-), whose lifetime contributions to orchid biology and taxonomy are both legendary and too numerous to list.

Fragrance: methyl salicylate with a trace of methyl benzoate.

Illustration: L.C. Vieira (1990), as *Dressleria eburnea.*

Pollination: *Eufriesia concave* observed by Dodson 1996 (pers. comm.). This observation was of a plant collected in eastern Ecuador being grown on the Pacific side. It is not known if the same species of bee pollinates *Dressleria dodsoniana* in its native habitat.

6. DRESSLERIA EBURNEA (Rolfe) Dodson, Selbyana 1: 132. 1975. *Catasetum eburneum* Rolfe, Kew Bull. 1906: 86. 1906. **LECTOYPE** (designated here): **COLOMBIA**. near Pamplona, ex hort. 19 Sep 1901, *Charlesworth & Co. s.n.* (K); two other collections on the same sheet are dated Sep 1900 and Aug 1903 respectively. Figs. 3 & 9.

Dressleria suavis (Ames & C. Schweinf.) Dodson, Selbyana 1: 132. 1975. *Catasetum suavis*. Ames & C. Schweinf., Sched. Orchid. 10: 81. 1930. **TYPE**: **COSTA RICA**. Prov. of Heredia, La Fuente, 1200 m, 16 Aug 1925, *A. Alfaro 162.* (holotype: US; isotype: AMES).

Pseudobulbs fusiform to 12 cm, 2–3 cm wide. **Leaves** to 40 cm, to 7cm wide. **Inflorescence** basal, loosely flowered raceme, to 35 cm. **Pedicels** to 4 cm long. **Flowers** ivory white, nonresupinate, saccate. **Sepals** 22–30 mm long, 11–12 mm wide strongly reflex along the ovary. **Petals** 22–24 mm long, 14–16 mm wide strongly reflex along the ovary. **Lip** longer than broad, 20–22 mm x 12–16 mm. Top half of the lip beaked. Callus very prominent on sides and top of opening elevated 2 mm. Opening to the sac large nearly 8–9 mm wide at the base of the column, 5–6 mm high. Lip adnate to the bottom half of the column. **Column** 9–10 mm long, 8–9 mm wide at the base. **Fruit** not seen.

The type sheet of *Catasetum eburnea* at K includes three collections of the species. One of these, dated 1901, was transmitted by the firm of Charlesworth & Co. and is here designated as the lectotype. The collection reportedly came from the Pamplona District of Colombia. No subsequent specimens of *D. eburnea* are known from South America and the type locality almost certainly is erroneous.

Dressleria collections from east of Pamplona have been identified as *D. kalbreyeri.* A source of confusion regarding application of *C. sauve* initially was caused because of an unpublished illustration associated with the protologue. The drawing, attached to a specimen of *D. dilecta Lankester 1181*, (AMES), is that of *D. eburnea*. Ames and C. Schweinfurth stated specifically that "the description was drawn from dried specimens supplemented by flowers preserved in formalin".

The flowers preserved in formalin are those of *D. dilecta* obtained by Lankester when he prepared his dried specimen 1181. This combining of material from two different species likely hindered the recognition of additional species when additional material was sent to AMES for identification.

Dodson annotated the type specimen of *Catasetum suave* as *Catasetum eburneum* but chose to maintain *C. suave* when he proposed the genus *Dressleria*. Mansfeld (1932) noted that he did not see the material at AMES when he reduced all the material to *Catasetum dilectum*. Mansfeld did annotate the specimen at Kew. The description of both *Cataseum eburnea* and *C. sauve* state that the sepals and petals are reflexed unlike the spreading segments of most of the South American species that have been called *D. eburnea*.

Figure 9. *Dressleria eburnea.* (Rolfe) Dodson. Photos by Calaway H. Dodson

Distribution: Costa Rica and Nicaragua.

Additional specimens examined. **COSTA RICA**: Prov. of Alejuela, Fortuna-Palma Road, North Slope Volcan Arenal, Luther, Skotat & Bak 25 Jun 1990 ex hort MSBG 1990-0738, 16 Jun 1997, *H.E. Luther s.n.* (SEL); Prov. of Heredia, La Fuente, 1100m, 7 Sep 1924, *A. Alfaro s.n.* (US); Rt 9 at km 47, Sarapiqui River Valley, Mar 1986, Hills, Whitten & Ballestara, ex hort. F1045, 26 June 1989, *W.M. Whitten 1022* (FLAS,); without localiton, ex hort. MO 64-98-3 (SEL spirit # 4532); without location, ex hort. MSBG 1991-0327, 8 Jun 1992, *S.W. Ingram 1040* (SEL, AMES spirit, K spirit). **NICARAGUA**: Prov. of Zelaya: Cerro Musún, 915 m, *A. H. Heller 5081* (SEL, drawing only); without location, ex hort. Montreal 2175-16, *H. Teuscher s.n.* (AMES spirit P3258).

Etymology: From Latin *eburneus*, ivory white.

Fragrance: 1,8-cineole, methyl benzoate and methyl salicylate.

Illustrations: Hamer (1982c) as *Dressleria suavis*, redrawn from Heller's illustration of *Heller 5081*; *Dressleria suavis* (Ames & C. Schweinf.) Dodson, Selbyana 1: 132. 1975, figure 1c; Herrera, C & N. Zamora (2003) as *Dressleria dilecta*.

7. DRESSLERIA FRAGRANS Dodson, Orquideología 21: 3. 1998. **TYPE**: **ECUADOR**. Prov. of Bolivar, 7 km east of Balzapamba on road to San Jose de Chimbo, region of El Torneado, 1400 m, 16 Jun 1960, *C.H. Dodson 100* (holotype: SEL; isotype: AMES spirit). Fig. 10.

Pseudobulbs fusiform to 15 cm tall, 2–3 cm wide. **Leaves** to 45 cm, to 7 cm wide. **Inflorescence** basal, arching, raceme, to 25–35 cm. **Pedicels** to 4 cm. **Flowers** greenish yellow, nonresupinate, saccate. **Sepals**: dorsal sepal oblong-lanceolate, acuminate to 23 mm long, 9 mm wide, the lateral sepals subsimilar and subequal to the dorsal sepal. **Petals** elliptic, acute, to 20 mm long, 13 mm wide. **Lip** broadly ovate-suborbicular, acute, globose-saccate, fused to the basal third of the column, to 22 mm long, to 15 mm wide, the opening to the sac transversely rectangular, 8 mm wide, 4 mm high, the front edge with a small central tooth, without well-defined lateral callus. **Column** 7–8 mm long, 10–11 mm wide at base. **Capsule** elliptical.

Figure 10. *Dressleria fragrans* Dodson. *Dodson 8555* (MSBG 1979-1310). Photo by William C. Whitehill. The illustration for the description of *D. fragrans* was drawn from this plant.

Dressleria fragrans is similar to *D. dodsoniana*, although authors erroneously have considered this species to be *D. eburnea*. In addition to sharp differences in floral fragrances, *D. fragrans* differs from *D. eburnea* by having non-reflexed lateral sepals and petals and virtually no callus associated with the opening to the sac. The photographs in the envelope attached to the type specimen of *D. fragrans* are those of *D. dodsoniana* a species that occurs in eastern Ecuador. Dodson (pers. comm.) said the photos were attached when he considered everything in South America to be *D. eburnea*.

Distribution: Pacific slope Ecuador.

Additional specimens examined. **ECUADOR**: Prov. of Cañar, region Cochencay, km 85, Guayaquil-Tambo, alt. 400 m, C. Horich, ex hort., Univ. California Botanical Garden, Berkeley

Accession No. 60.1152-1, 60.1152-2 & 60.1152-3, 01 Jan 1961, *C.H. Dodson 357* (SEL); 7 Nov 1960, *P.C. Hutchison s.n.* (AMES); 15 May 1963, *P.C. Hutchison s.n.* (NY); 28 Oct 1962, *P.C. Hutchison s.n.* (MO); 21 Sep 1963, *P.C. Hutchison s.n.* (US); 29 Sep 1962, *P.C. Hutchison s.n.* (AMES); 7 Dec 1961, *M. Kimnach s.n.* (MO, UC); Ecuador without location, ex hort., 19 Oct 1978, *M. Powers s.n.* (SEL); Prov. of Pichincha, forest of the Cooperative Sta. Marta # 2 at km 3 west of bypass around Santo Domingo, 530 m, 22 Jul 79, *C.H. Dodson, Morgan & T. Dodson 8555* (MO, SEL; both sterile); forest of the Cooperative Sta. Marta # 2 at km 3 west of bypass around Santo Domingo, 530 m, 22 Jul 79, Dodson, Morgan & T. Dodson 8555 ex hort. MSBG 1979-1310, 7 Sep 1986, *H.G. Hills 86204* (AMES, FLAS, K spirit, MO, SEL,); 29 Nov 1987, *H.G. Hills 87141* (FLAS); 6 Sep 1991, *S.W. Ingram 1112* (NCU); Centinella, ex hort. *Perry 304* (SEL spirit #5920); Centinella, 12 km east of Patricia Pilar, 700 m, 2 Feb 1987, *C.H. Dodson 17103* (MO).

Etymology: From Latin *fragrans*, smelling agreeably.

Fragrance: 100% eugenol (oil of cloves).

Illustrations: Dodson & Dodson (1980) as *Dressleria eburnea*; Arosemena G. et al. (1988) as *D. eburnea.*

Pollination: Dodson (1962) observed pollination by *Eulaema cingulata* and described the mechanism. He made a second observation of pollination by *Eulaema cingulata* in 1996 (per. comm.) where he describes *D. dodsoniana* blooming at the same time being pollinated by *Eufriesia concave*. The bees never made a mistake of visiting the other species.

8. DRESSLERIA HELLERI Dodson, Selbyana 1:132. 1975. **TYPE: NICARAGUA.** Dept. Jinotega: coffee plantation at the base of Peñas Blancas, 915 m, 1 Jun 1965, *A.H. Heller 8422* (holotype: SEL). Fig. 11

Pseudobulbs fusiform to 10 cm tall, 2–3 cm wide. **Leaves** to 45 cm, to 6 cm wide. **Inflorescence** basal, erect, subcapitate or somewhat racemose to 20 cm. **Pedicels** to 3cm. **Flowers** ivory white, nonresupinate, appearing nearly round. **Sepals** 17–19 mm long, 6.5–7 mm wide strongly reflexed along the ovary. **Petals** 14–15 mm long, 10–11 mm wide, strongly appressed to the ovary. **Lip** 15–16 mm long, 12–13 mm wide. Apical half of the lip flat or slightly cupped. Callus of the lip elevated 2–3 mm to make the lip entirely adnate to the column. Margin of opening erose distally, opening cordate, 4–4.5 mm at the widest point, 4–4.5 mm high. **Column** 7–8 mm long, 8–9 mm wide at the base. **Fruit** not seen.

Dressleria helleri is most similar to *D. dilecta* and primarily differs by its shape of the opening to the sac that is cordate and a floral fragrance dominated by beta ocimene and p-dimethoxybenzene. *Dressleria dilecta* has a floral fragrance with alpha pinene, 1,8 cineole and lesser amounts of p-dimethoxybenzene and a more rectangular opening to the sac.

Interpretation of this species has been problematic because the illustration used by Dodson (1975) as well as one of the paratypes cited actually represents *Dressleria kerryae* and not *D. helleri.* By the Rules of Botanical Nomenclature the type material, *Heller 8422* represents the species and is so interpreted here. Figure 11 illustrates the differences between *D. dilecta* and *D. helleri* and compares their size to *D. eburnea.* Hamer's (1982a) illustration of *D. helleri* is a redrawing of Heller's unpublished illustration based on *Heller 7094*; this is the true *D. helleri.* Hamer's (1982b) illustration of *D. dilecta* is based on *Heller 8422*, the holotype of *D. helleri.*

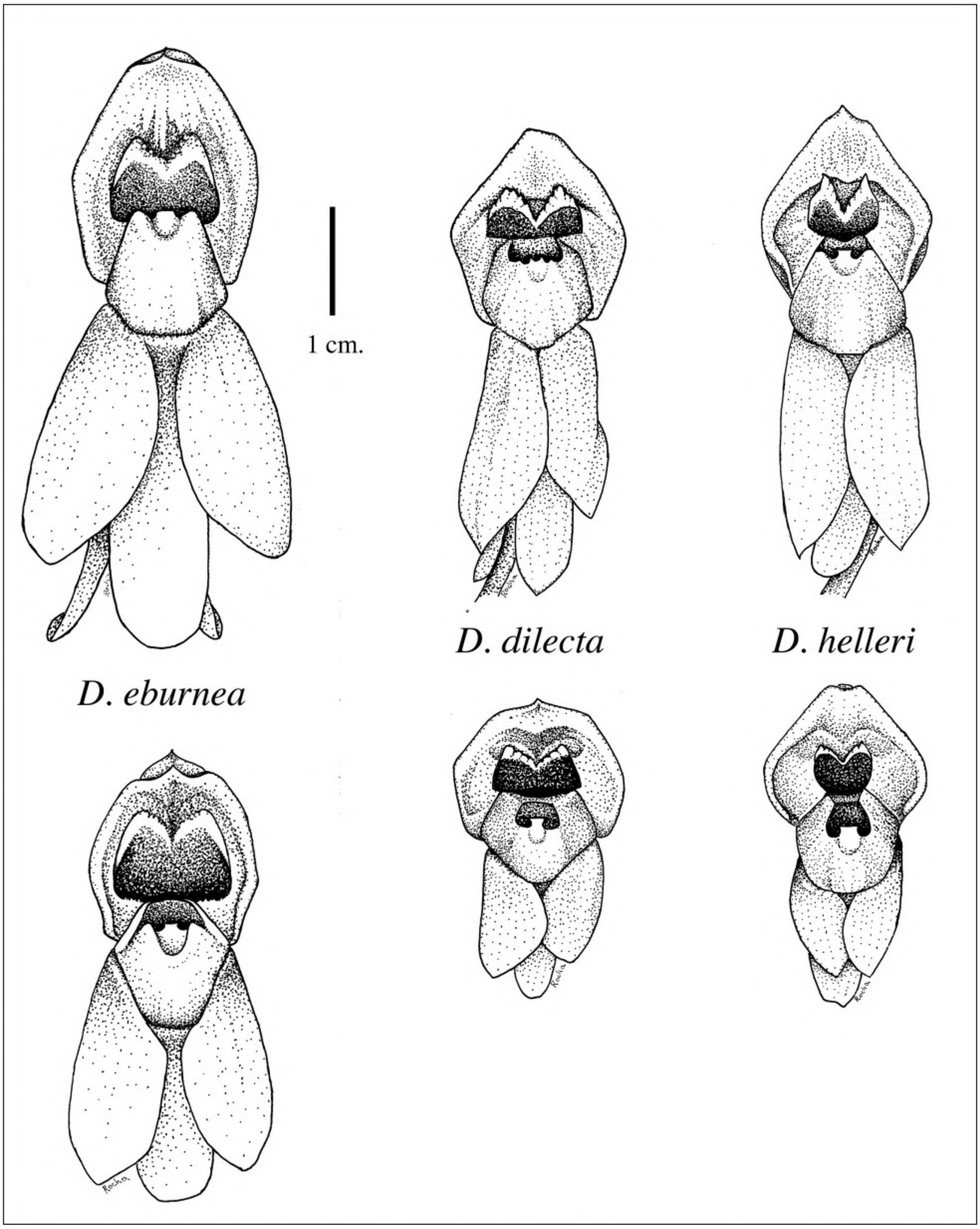

Figure 11. *Dressleria eburnea* (Rolfe) Dodson (*W.M. Whitten 1022*); *D. dilecta* (Rchb. f.) Dodson (*H.G Hills 87179*), and *D. helleri* Dodson (*H.G Hills 87178*). These three species are sympatric in the Sarapiqui River Valley, Costa Rica. Each produces a unique fragrance. Drawing by Omar E. Rocha G.

Distribution: Nicaragua and Costa Rica.

Additional specimens examined. **NICARAGUA**: Dept. of Jinotega, coffee plantation at the base of Peñas Blancas, alt. 915 m, Jun 1965, *A. H. Heller 7094* (SEL); Dept. of Chontales, Babilonia Mine, 570 m, Sept (without year), *A. H. Heller 6972* (SEL); Dept. of Zelaya, Cerro Saslaya, cloud forest, 1100 m, 3 May 1978, *D.A. Neill 3838* (MO). **COSTA RICA**: Many plants were collected Prov. of Heredia, along Rt 9 at km 47, Sarapiqui River Valley, Mar 1986, Hills, Whitten & Ballestara, ex hort. F1044, 20 Feb 1987, *H.G. Hills 87178* (AMES); 29 Oct 1987, *H.G. Hills 87145* (FLAS); 10 Jun 1990, *H.G. Hills 90018* (NCU, K in spirit); 09 Jun 1991, *H.G. Hills 91707* (AMES); 09 Jun 1992, *W.M. Whitten sn* (FLAS); ex hort F1047, 29 Nov 1987, *H.G. Hills 87181* (SEL); ex hort. F1046, 5 Jul 1988, *W.M. Whitten s.n.* (SEL); ex hort. F1087, 1 Jul 1988, *W.M. Whitten 1018* (FLAS,); 03 Jun 1991, *S.W. Ingram and Uguccioni 967*; without location, ex hort., *F.L. Stevenson 61069* (SEL spirit #4526); without location, ex hort. MO 60-9-77 (SEL spirit #4184); without location, Lankester, ex hort. K 434-1959 (K).

The flower buds of *Neill 3838* are so immature as to render a positive identification impossible. Because of the proximity in collection locale to the other Nicaraguan material, and characteristics of the inflorescence, the collection has been annotated as *Dressleria helleri.* Given this interpretation, there are no authenticated specimens of *D. dilecta* known from Nicaragua.

Etymology: The species honors the late Alfonce Henry Heller (1894-1993), an avid orchid enthusiast who contributed substantially to our knowledge of Nicaraguan orchids.

Fragrance: Dominated by beta ocimene and p-dimethoxybenzene.

Pollination: The pollination observations of Dressler, cited by Dodson (1975), are actually those for *Dressleria kerryae.*

9. **DRESSLERIA KALBREYERI** H.G. Hills, Lindleyana 15:173. 2000. **TYPE**: **COLOMBIA**. Norte de Santandar, vicinity of Ocana, Jan 1878, *Kalbreyer 504* (holotype: W; isotype: AMES). Fig. 12.

Pseudobulbs fusiform to 10 cm tall, 2–3 cm wide. **Leaves** to 45 cm x 6 cm. **Inflorescence** basal, loosely flowered raceme, to 30 cm. **Pedicels** to 4 cm. **Flowers** nonresupinate, saccate. **Sepals** 18 mm long, 5.5 mm wide. **Petals** 17 mm long, 10 mm wide. **Lip** 15 mm long, 10 mm wide, adnate to the bottom third of the column. Apex half of the lip flat or slightly reflexed, Entrance to the saccate portion of the lip a slit partially hidden behind the column, 3.5 mm wide at the base of column, 7 mm wide at the top, 2 mm high. **Callus** not well defined, a low mound. **Column** 6 mm long, 6–7 mm wide at base. **Fruit** not seen.

Dressleria kalbreyeri may be distinguished by its narrow, transverse opening to the sac that is partially concealed by the column and by the small flowers with narrow sepals.

Distribution: Northeastern Colombia and western most Venezuela.

Additional specimens examined. **COLOMBIA**: Dept. of Meta, near Villa Vicencio, *G. Escobar 496* (AMES); near Villa Vicencio, *G. Escobar 532* (AMES). **VENEZUELA**: Edo. Tachira, Quebrada La Blanquita, near La Fundación, R. Mejia C. ex hort., Oct 1973, *Dunsterville 1295* (SEL spirit).

Etymology: The species is named for the collector of the type, Wilhelm (Guillermo) Kalbreyer (1847-1912).

Fragrance: Unknown.

Illustrations: Garay (1969) as *Catasetum dilectum*; Dunsterville and Garay (1976, 1979) as *Dresslera dilecta*; Romero and Carnevali (2000) as *Dressleria dilecta*.

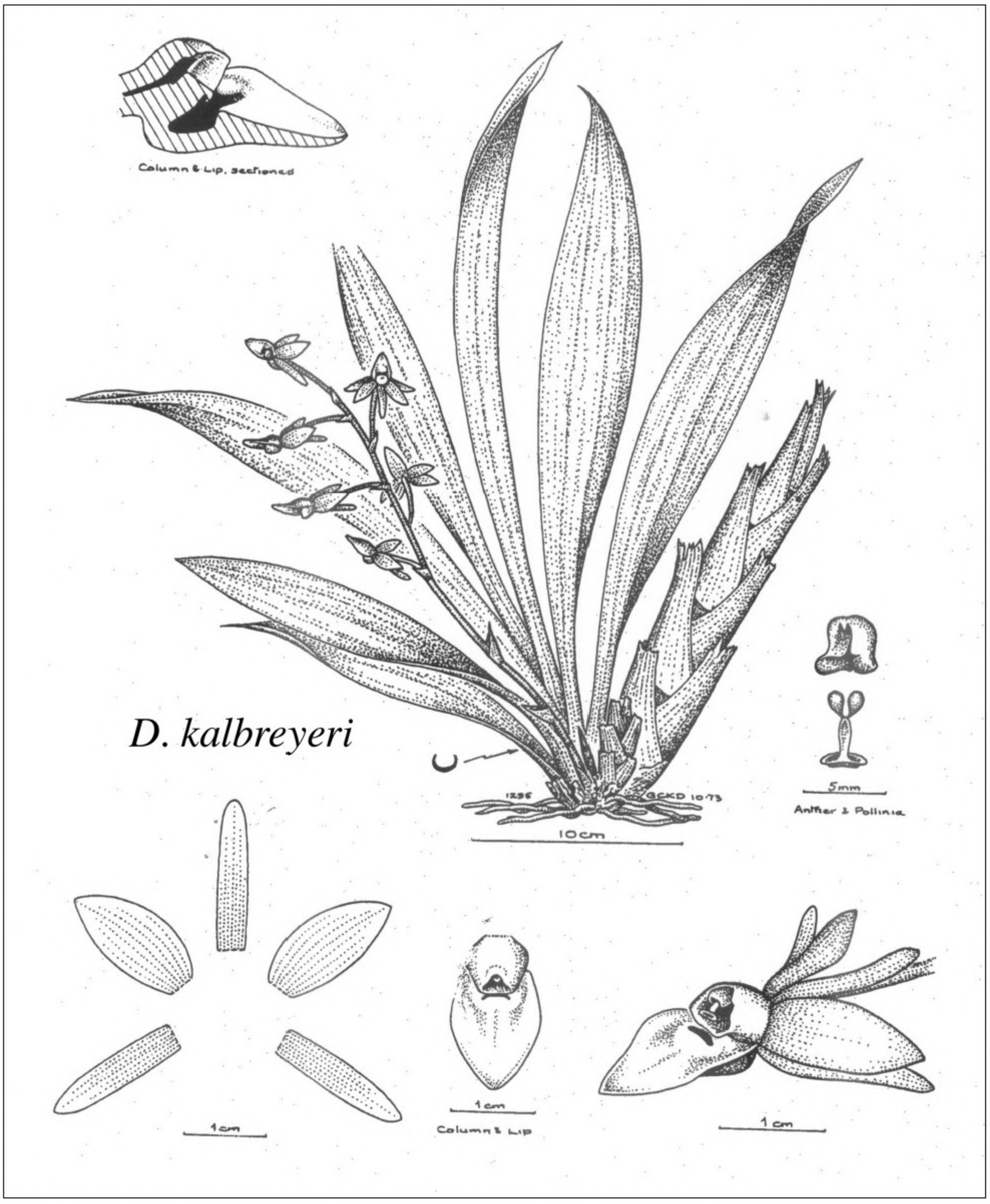

Figure 12. *D. kalbreyeri* H.G. Hills (*R. Mejia C. s.n.*). Drawing by G.C.K. Dunsterville.

10. DRESSLERIA KERRYAE H.G. Hills, Lindleyana 15:173. 2000. **TYPE**: **PANAMA**. Prov. Panama: Cerro Jefe, 27 May 1968, *R. L. Dressler 3515* (holotype: FLAS). Fig.13.

Pseudobulbs fusiform to 10 cm, 2–3 cm wide. **Leaves** to 45 cm, to 6 cm wide. **Inflorescence** basal, arching, loosely flowered raceme to 35 cm. **Pedicel** to 4 cm. **Flowers** non-resupinate, longer than broad. **Sepals** 19–21 mm long, 6–7 mm wide strongly reflexed against the ovary. **Petals** 16–17 mm long, 10–11 mm wide strongly reflexed against the ovary. **Lip** 16–17 mm long, 10–11 mm wide. Top half of the lip flat or slightly reflexed. Callus of the lip elevated 3–4 mm to make the lip entirely adnate to the column. Opening to the sac is small and nearly rectangular, 2.0–3.5 mm high, 1.5–2.0 mm wide. Margin of the opening entire. **Column** 8–8.5 mm long, 8–8.5 mm wide at base. **Fruit** not seen.

Figure 13. *Dressleria kerryae* H.G. Hills (*A. Niessen s.n.*). Photo by Juan Carlos Uribe.

Dressleria kerryae has been confused with *D. helleri* (e.g., the illustration in Dodson [1975] is *D. kerryae and not D. helleri*) and differs from the latter by having an entire opening to the lip unlike the erose margin of *D. helleri*. *Dressleria kerryae* is most similar to *D. severiniana*, differing by the shape and size of the opening to the sac. In *D. kerryae* the opening is elongate and nearly twice as long as broad. In *D. severiniana* the opening is nearly square. The elevation of the callus from the plane of the lip is more than twice that of *D. severiniana*.

I have annotated *Cuatrecasas 14981* as *Dressleria kerryae* although the flowers are not fully developed. In addition, G. Gerlach (pers. comm.) has material of *D. kerryae* collected in the province of Choco, Colombia (cultivated at HEID, acc. #0-19206). Additional collections from the Pacific slope of Colombia will help to clarify the range of the species.

Distribution: Eastern Panama and Pacific slope of Colombia.

Additional specimens examined. **PANAMA**: Prov. Panama, Cerro Jefe, 1968, Dodson & Dressler, same field collection as the holotype, ex hort. UM 12-68-1, 11 June 1968, *H.G. Hills 68101* (AMES spirit, K spirit, SEL spirit #4531); El Llano-Carti Road, 1976, N.H. Williams, ex hort. MSBG 1976-56-8, 10 May 1978, *Pridgeon s.n.* (SEL); 10 km north of Margarita on road to Madroço, 550 m, 31 Jan 1979, *Hammel 6017* (MO). **COLOMBIA**: Dept. Valle del Cauca, Cordillera Occidental, Hoya del Rio Digua, Piedra de Moler, 19-28 Aug 1953, *Cuatrecasas 14981* (AMES); west of Calima Lake near Rio Bravo, 2001, *A. Niessen s.n.* (SEL spirit).

Etymology: The species name honors Kerry Dressler (1947-), wife of Robert Dressler.

Fragrance: 1,8 cineole and p-dimethyoxy benzene.

Illustrations: Dodson (1975) figure 1D as *Dressleria helleri*; Misas Ureta (2006) as *D. helleri.*

Pollination: Dodson (1975) reported that Dressler observed flower visitation on Cerro Jefe, type locality of the species. Dressler (pers. comm.) has updated the information and reports *Eufriesia anisoclora, Eufriesia schmidtiana, Euglossa asarophora* and *Euglossa championi* with *Dressleria* pollinaria. Dressler (pers. comm.) has collected *Euglossa ignita* from Bahia Solano, Choco, Colombia with *Dressleria* pollinaria that presumably are of this species.

11. DRESSLERIA SEVERINIANA H.G. Hills, Amer. Orchid Soc. Bull. 60:616. 1993. **TYPE**: **PANAMA**. Prov. Coclé, El Valle de Anton, R. L. Dressler, sin. dat., ex hort. F1757, 12 May 1990, *H.G. Hills 90015* (holotype: AMES [not yet sent]; isotype: K spirit). Figs. 14 & 15.

Pseudobulbs fusiform to 12 cm. **Leaves** to 45 cm, to 6 cm wide. **Inflorescence** basal, loosely flowered raceme to 30 cm. **Pedicel** to 3.5 cm. **Flowers** non-resupinate, elongate. **Sepals** 21–23 mm long, 5–6 mm wide strongly reflexed against the ovary. **Petals** 17–18 mm long, 10–12 mm wide strongly reflexed against the ovary. **Lip** 17–18 mm long, 11–12 mm wide, apical half of lip flat or slightly reflexed; callus of lip elevated 1.5 mm making the lip entirely adnate to column; opening to the sac nearly square, 4.5 mm high, 4.5 mm wide; margin of opening to the sac a thin flap of tissue. **Column** 7.5–8 mm long, 8–9 mm wide at base. **Fruit** not seen.

Dressleria severiniana has been consistently misidentified as *D. dilecta* that differs by the shape of the lip opening and inflorescence. In *D. severiniana* the opening is nearly square with an almost entire margin whereas *D. dilecta* lip opening has an erose margin. The inflorescence of *D. severiniana* is a loosely flowered raceme, unlike the densely flowered, subcapitate inflorescence of *D. dilecta* with overlapping flowers.

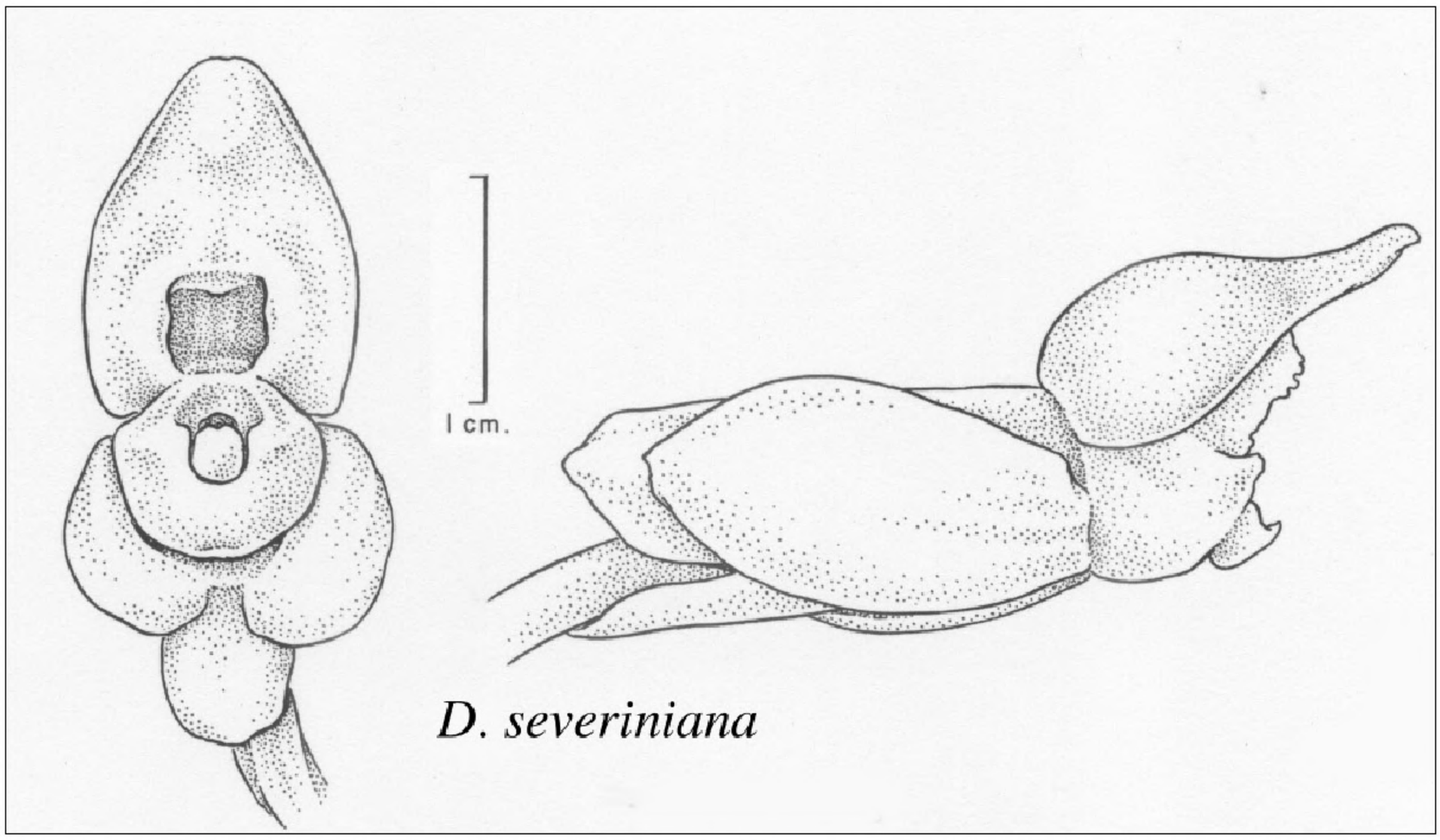

Figure 14. *Dressleria severiniana* H.G. Hills. Drawing of the holotype (ex.hort. F1757 *H.G. Hills 90015*) by Bobbi Angell.

Figure 15. *Dressleria severiniana* H.G. Hills (ABG 20020113). Photo by Danny Lentz. The plant is growing at the Atlanta Botanical Garden.

The placement of *Allen 4565*, consisting solely of flowers in spirit and a photograph, is problematic and it may represent a hybrid with *Dressleria dilecta* or else is an undescribed species. No additional material is known. It is hoped with publication of the photo (Fig. 19), that addition material will be found. Allen's description in the Orchids of Panama appears to have been taken from the description of *Catasetum suave* and not a description of his specimen 4565. Allen (1949) clearly states that neither of his specimens agrees with *C. dilectum*.

Distribution: Panama.

Additional specimens examined. **PANAMA**: Prov. Cocle, El Valle de Anton, R.L. Dressler, ex hort. F1756, 28 May 1987, *H.G. Hills 87180* (AMES, SEL); El Valle de Anton, R. L. Dressler, ex hort. F1757 same plant as holotype, 10 May 1990, *H.G. Hills 90015* (K in spirit); 09 May 1991, *H.G. Hills 91014* (NCU) 30 May 1992, *H.G. Hills 92004* (AMES, SEL): 07 May 1996, *W.M. Whitten 3603* (FLAS); El Valle de Anton, César Barsallo ex hort. *Dressler s.n.* (FLAS); El Valle de Anton, 9 Jan 1972, *A. Gentry & J. Dwyer 3681* (MO): Prov. Veraguas, Cerro Tuté region west of Santa Fe, 915m, *P.H. Allen 4565* (AMES spirit #P2723).

Etymology: The species name honors Lil Severin (1905-1998), who had been a long term AOS judge from Cupertino, California.

Fragrance: 1,8-cineole, phenyl ethyl alcohol, methyl salicylate and phenylethyl acetate.

12. DRESSLERIA WILLIAMSIANA H.G. Hills, **sp. nov. TYPE ECUADOR**. Prov. Esmeraldas; Agave plantation off road from Lita to Cachaco Aug. 1987, Whitten *et. al.* ex hort. F87038, 6 Feb 1989, *W.M. Whitten s.n.* (holotype: MO). Figs.16, 17 & 18.

Dressleria williamsiana is most similar to *D. bennettii* but differs by the location and the shape of the callus. In *D. williamsiana* the callus is tongue like extending from the tooth of the transverse narrow opening of the lip to the apex of the lip unlike the triangular callus of *D. bennettii*. Callus on the sides of the opening not prominent as with *D. bennettii*. The presence of the tongue-like callus and narrow transverse opening distinguishes *D. williamsiana* from *D. fragrans*.

Epiphyte with basal thickly vermiform roots. **Pseudobulbs** fusiform-cylindric, 6–12 cm tall, 2–4 cm wide, fleshy, concealed by persistent leaf bases. **Leaves** oblong-lanceolate, up to 35 cm long, 6 cm wide, acute, persistent, alternate, distichous, prominently veined abaxially. **Inflorescence** a basal arching loosely flowered raceme to 35 cm long. **Pedicels** to 4 cm long, **Flowers** nonresupinate, greenish white turning yellow with age, fleshy, strongly fragrant. **Sepals** lanceolate, acute, dorsal sepal to 26 mm long, 6.5 mm wide, reflexed along the ovary; lateral sepals lanceolate, obtuse, strongly divergent, to 25 mm long, 6.5 mm wide. **Petals** ovate, acute, to 23 mm long, 12 mm wide. **Lip** uppermost, elliptic-ovate, acute, saccate, adnate to the basal third of the column, to 20 mm long, 14 mm wide; sac transverse, obscurely 2-lobed, opening of the sac transverse, narrow hidden by the column. Tongue like callus extending from tooth in the opening of the sac to the apex of the lip. **Column** to 6 mm long, to 9 mm wide at base. **Pollinia** 2, borne on a common stipe and viscidium. **Fruit** not seen.

Distribution: Known only from northwestern Ecuador but likely occurs in southwestern Colombia.

Additional specimens examined. **ECUADOR**: Prov. Esmeraldas; Agave plantation off road from Lita to Cachaco Aug. 1987, Whitten *et al.,* same field collection as the holotype, flowered at Harvard, 1 Oct 1989, *G. Romero 2031* (AMES photo & spirit); Cristal, 10 km southwest of road from

Lita to Alto Tambo beginning at km 4. 1400-1500 m. ex hort. Rio Palenque Science Center, 10 July 1989, *C.H. Dodson & A. Gentry* 17655 (MO).

Figure 16. *Dressleria williamsiana* H.G. Hills (*Whitten et al.*). Plant from the same field collection as the holotype, flowered at Harvard. Photo by Gustavo A. Romero.

Figure 17. *Dressleria williamsiana* H.G. Hills. Close view showing narrow opening of the sac. Photo by Gustavo A. Romero.

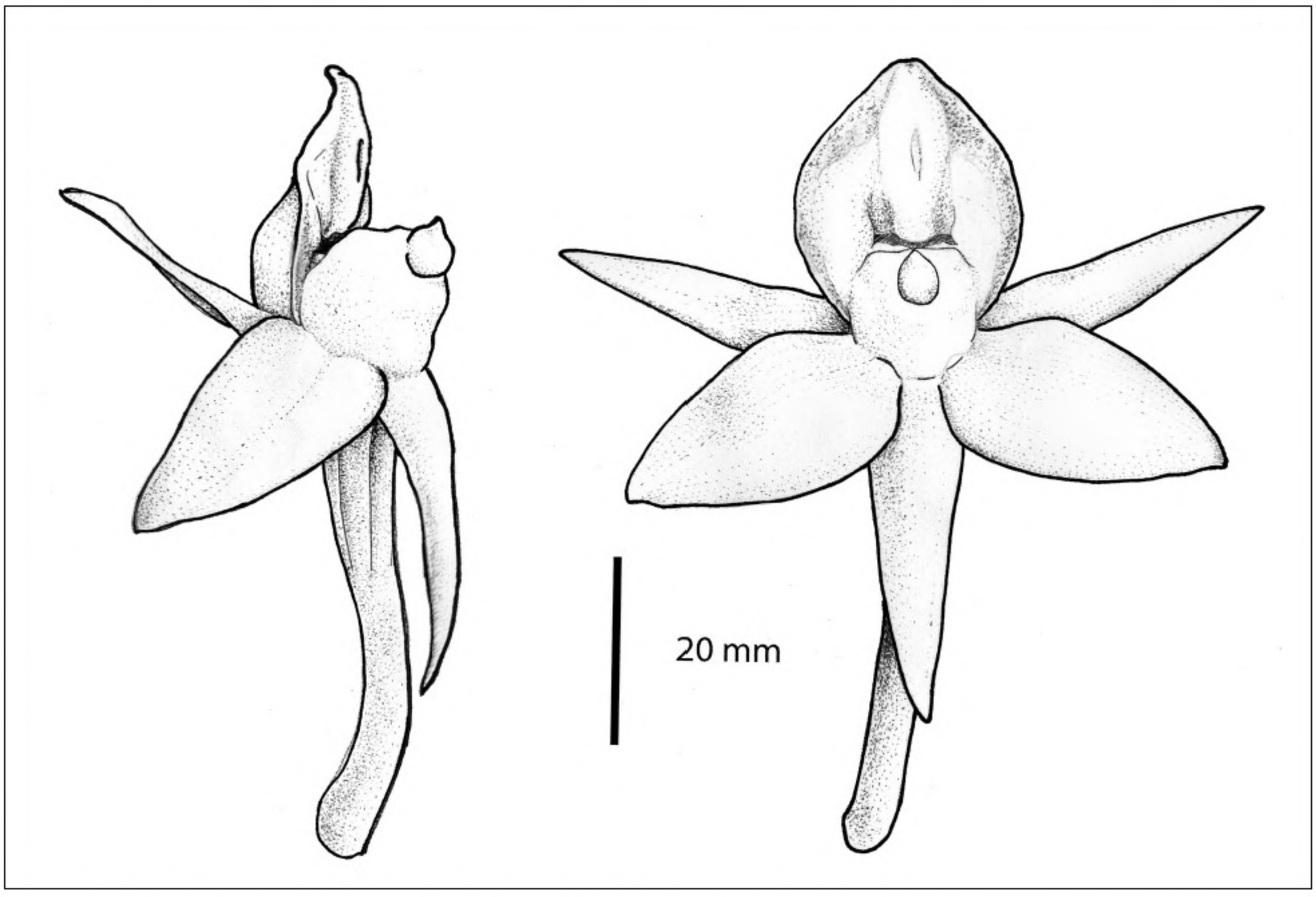

Figure 18. *Dressleria williamsiana* H.G. Hills. Drawing by Alfonso Doucette.

Etymology: The species name honors Norris H. Williams, who has spent much of his professional career in the study of Orchidaceae. His work spans a multitude of disciplines, from floral fragrance analysis to molecular systematics to field biology. He was an important part of the field team that discovered this species.

Fragrance: methyl salicylate.

Dressleria williamsiana should not be confused with "*D. williamsii*," an unpublished name assigned to specimens of *D. kerryae*.

SUMMARY AND CONCLUSIONS

Like many people who have submitted a revision, I can assure you this is not the last word. There is considerable variation in what I have called *Dressleria dodsoniana*. There have been no recent collections of *D. eburnea* in South America and since the holotype was made from a cultivated plant, the origin of the plant being from Colombia probably is in error. None of the collections from South America matches the description of *Dressleria eburnea* and six new species have been named. They are: *D. aurorae, D. bennettii, D. dodsoniana, D. fragrans, D. kalbryeri, and D. williamsiana.* None of the material originating from Panama has been shown to be *Dressleria dilecta* or *D. helleri* and three new species have been named: *D. severiniana, D. kerryae, and D. allenii.* There is also a plant collected once in western Panama by Paul H. Allen (Fig. 19) that may be a hybrid or a new species that does not represent *Dressleria. dilecta or D. severiniana*. The material from west of Cali, Colombia (Fig. 20) is clearly a new species but no herbarium material exists and no recent collections have been made.

Figure 19. *Dressleria sp.* or a natural hybrid? *Allen 4565*. Photo by Paul H. Allen

Figure 20. *Dressleria species.* Pacific slope of Colombia west of Cali. Photo by Juan Carlos Uribe.

ACKNOWLEDGEMENTS

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